SEQUENCE LISTING

<110> Gorenstein, David G
       Luxon, Bruce A
       Herzog, Norbert
       Aronson, Judy

<120> Thio-Modified Aptamer Synthetic Methods and Compositions

<130> 122144-1001

<140> 09/425,804
<141> 1999-10-25

<150> 60/105,600
<151> 1998-10-26

<160> 57
<170> PatentIn version 3.1

<210> 1
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<220>
<221> misc_feature
<222> (24)..(46)
<223> n = a, t, c or g

<400> 1
cagtgctcta gaggatccgt gacnnnnnnn nnnnnnnnnn nnnnnncgaa gcttatcgat   60

ccgagcg   67

<210> 2
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 2
gccgtccaca tacgacacca cc   22

<210> 3
<211> 22
<212> DNA
<213> Artificial Sequence

<220>

<223> Aptamer

<400> 3
ggccgaccgc acagcacaac cc   22

<210> 4
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 4
ggcgcggata caacccacac gc   22

<210> 5
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 5
gggcccgctg tacatgcaca cg   22

<210> 6
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 6
gggcccgctg tacatgcaca cg   22

<210> 7
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 7
gggcccgctg cacgtgcaca cg   22

<210> 8
<211> 22
<212> DNA

<213> Artificial Sequence

<220>
<223> Aptamer

<400> 8   22
gggcccgctg tacacgcaca cg

<210> 9
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 9   22
cccgttgttg tcccactcca cg

<210> 10
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 10   22
cccgttgttg tcccgctcca cg

<210> 11
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 11   10
gttgcgcaac

<210> 12
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 12   10
gctgtacatg

```
<210>  13
<211>  10
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  13
gttgtcccac                                                        10


<210>  14
<211>  10
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  14
gttgttgtcc                                                        10


<210>  15
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  15
cgtgtgcatg tacagcgggc cc                                          22


<210>  16
<211>  42
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  16
ccaggagatt ccacccagga gattccaccc aggagattcc ac                    42


<210>  17
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  17
```

```
ccaggagatt ccac                                                14


<210> 18
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 18
ggggacttcc                                                     10


<210> 19
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<220>
<221> misc_feature
<222> (19)..(41)
<223> n = a, c, t, or g

<400> 19
atgcttccac gagcctttcn nnnnnnnnnn nnnnnnnnnn nctgcgaggc ggtagtctat   60

tc                                                             62


<210> 20
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 20
ggggcggggg gatatggaca cc                                        22


<210> 21
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<400> 21
gggctggtgt ggtagactcc cc                                        22
```

```
<210>  22
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  22                                                                      22
cccgcccaca cacaccgccc cc


<210>  23
<211>  23
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  23                                                                      23
gggccgggag agaacatagc gac


<210>  24
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  misc_feature
<222>  (4)..(4)
<223>  n = a, c, t, or g

<220>
<221>  misc_feature
<222>  (6)..(8)
<223>  n = a, c, t, or g

<400>  24                                                                      22
cccncnnnca cacaccgccc cc


<210>  25
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  25                                                                      22
ggtatactct ccgcccctcc cc
```

```
<210>   26
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<400>   26
cccacatgta cacgccgccc ccgccc                                    26


<210>   27
<211>   22
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<220>
<221>   misc_feature
<222>   (9)..(9)
<223>   n = a, c, t, or g

<220>
<221>   misc_feature
<222>   (14)..(14)
<223>   n = a, c, t, or g

<400>   27
cccacatgna cacnccgccc cc                                        22


<210>   28
<211>   22
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<400>   28
gggcgtatat gtgtggcggg gg                                        22


<210>   29
<211>   14
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<400>   29
```

gtggaatctc ctgg

```
<210>  30
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (9)..(10)
<223>  thymidine 3'-O-phosphorothioate

<400>  30
ccaggagatt ccac
```

```
<210>  31
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (2)..(2)
<223>  thymidine 3'-O-phosphorothioate

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  thymidine 3'-O-phosphorothioate

<400>  31
gtggaatctc ctgg
```

```
<210>  32
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  thymidine 3'-O-phosphorothioate

<220>
<221>  modified_base
```

```
<222>  (9)..(9)
<223>  thymidine 3'-O-phosphorothioate

<400>  32
gtggaatctc ctgg                                                    14


<210>  33
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (2)..(2)
<223>  thymidine 3'-O-phosphorothioate

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  thymidine 3'-O-phosphorothioate

<220>
<221>  modified_base
<222>  (9)..(9)
<223>  thymidine 3'-O-phosphorothioate

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  thymidine 3'-O-phosphorothioate

<400>  33
gtggaatctc ctgg                                                    14


<210>  34
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (2)..(2)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  phosphorothioate or phosphorodithioate on complement strand
```

```
<400>  34
ccaggagatt ccac                                                      14


<210>  35
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (5)..(5)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  35
ccaggagatt ccac                                                      14


<210>  36
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (2)..(2)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (5)..(5)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  36
ccaggagatt ccac                                                      14
```

```
<210>  37
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (9)..(10)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (2)..(2)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  37
ccaggagatt ccac                                                         14


<210>  38
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (9)..(10)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (5)..(5)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  38
ccaggagatt ccac                                                         14


<210>  39
<211>  14
```

```
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (9)..(10)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (2)..(2)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (5)..(5)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  39
ccaggagatt ccac                                              14


<210>  40
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<400>  40
agttgagggg actttcccag gc                                     22


<210>  41
<211>  33
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
```

```
<222>   (9)..(9)
<223>   phosphate ester

<220>
<221>   modified_base
<222>   (9)..(9)
<223>   phosphorodithioate

<220>
<221>   modified_base
<222>   (20)..(20)
<223>   phosphorodithioate

<220>
<221>   modified_base
<222>   (20)..(20)
<223>   phosphate ester

<400>   41
ccaggagatt ccacttttgt ggaatctcct gga                          33


<210>   42
<211>   14
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<220>
<221>   modified_base
<222>   (9)..(10)
<223>   phosphorothioate or phosphorodithioate

<400>   42
ccaggagatt ccac                                               14


<210>   43
<211>   14
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<220>
<221>   modified_base
<222>   (3)..(3)
<223>   phosphorothioate or phosphorodithioate

<220>
<221>   modified_base
<222>   (13)..(13)
<223>   phosphorothioate or phosphorodithioate
```

```
<400>  43
ccaggagatt ccac                                                        14


<210>  44
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (8)..(8)
<223>  phosphorothioate or phosphorodithioate

<400>  44
ccaggagatt ccac                                                        14


<210>  45
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (3)..(3)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (8)..(8)
<223>  phosphorothioate or phosphorodithioate

<400>  45
ccaggagatt ccac                                                        14


<210>  46
<211>  14
<212>  DNA
<213>  Artificial Sequence
```

```
<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (8)..(8)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (13)..(13)
<223>  phosphorothioate or phosphorodithioate

<400>  46
ccaggagatt ccac                                                        14


<210>  47
<211>  14
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (8)..(8)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (3)..(3)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (13)..(13)
<223>  phosphorothioate or phosphorodithioate

<400>  47
ccaggagatt ccac                                                        14


<210>  48
<211>  14
```

```
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<220>
<221>   modified_base
<222>   (3)..(3)
<223>   phosphorothioate or phosphorodithioate

<220>
<221>   modified_base
<222>   (4)..(4)
<223>   phosphorothioate or phosphorodithioate

<220>
<221>   modified_base
<222>   (9)..(10)
<223>   phosphorothioate or phosphorodithioate

<400>   48
ccaggagatt ccac                                                             14


<210>   49
<211>   22
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Aptamer

<220>
<221>   modified_base
<222>   (12)..(12)
<223>   phosphorothioate or phosphorodithioate

<220>
<221>   modified_base
<222>   (14)..(14)
<223>   phosphorothioate or phosphorodithioate

<220>
<221>   modified_base
<222>   (18)..(18)
<223>   phosphorothioate or phosphorodithioate

<220>
<221>   modified_base
<222>   (13)..(13)
<223>   phosphorothioate or phosphorodithioate on complement strand

<220>
<221>   modified_base
<222>   (15)..(15)
<223>   phosphorothioate or phosphorodithioate on complement strand
```

```
<400>  49
ggggcggggg gatatggaca cc                                                    22


<210>  50
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (16)..(16)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (14)..(14)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (5)..(5)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (8)..(8)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (10)..(10)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (13)..(13)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (18)..(18)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  50
gggctggtgt ggtagactcc cc                                                    22


<210>  51
<211>  22
<212>  DNA
<213>  Artificial Sequence
```

<220>
<223> Aptamer

<220>
<221> modified_base
<222> (8)..(8)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base
<222> (10)..(10)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base
<222> (12)..(12)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base
<222> (14)..(14)
<223> phosphorothioate or phosphorodithioate

<400> 51
cccgcccaca cacaccgccc cc   22

<210> 52
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Aptamer

<220>
<221> modified_base
<222> (9)..(9)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base
<222> (11)..(11)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base
<222> (13)..(13)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base
<222> (14)..(14)
<223> phosphorothioate or phosphorodithioate

<220>
<221> modified_base

```
<222>    (16)..(16)
<223>    phosphorothioate or phosphorodithioate

<220>
<221>    modified_base
<222>    (18)..(18)
<223>    phosphorothioate or phosphorodithioate

<220>
<221>    modified_base
<222>    (22)..(22
<223>    phosphorothioate or phosphorodithioate

<220>
<221>    modified_base
<222>    (17)..(17)
<223>    phosphorothioate or phosphorodithioate on complement strand

<400>    52
gggccgggag agaacatagc gac                                                    23


<210>    53
<211>    22
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    Aptamer

<220>
<221>    misc_feature
<222>    (4)..(4)
<223>    n = a, c, t, or g

<220>
<221>    misc_feature
<222>    (6)..(8)
<223>    n = a, c, t, or g

<220>
<221>    modified_base
<222>    (12)..(12)
<223>    phosphorothioate or phosphorodithioate

<220>
<221>    modified_base
<222>    (14)..(14)
<223>    phosphorothioate or phosphorodithioate

<220>
<221>    modified_base
<222>    (16)..(16)
<223>    phosphorothioate or phosphorodithioate

<400>    53
cccncnnnca cacaccgccc cc                                                     22
```

```
<210>  54
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (4)..(4)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (3)..(3)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (5)..(5)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (8)..(8)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (10)..(10)
<223>  phosphorothioate or phosphorodithioate on complement strand

<220>
<221>  modified_base
<222>  (18)..(18)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  54
ggtatactct ccgcccctcc cc                                           22


<210>  55
<211>  26
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer
```

```
<220>
<221>  modified_base
<222>  (4)..(4)
<223>  phosphorothioate or phosphorodithioate


<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate


<220>
<221>  modified_base
<222>  (10)..(10)
<223>  phosphorothioate or phosphorodithioate


<220>
<221>  modified_base
<222>  (12)..(12)
<223>  phosphorothioate or phosphorodithioate


<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate on complement strand


<220>
<221>  modified_base
<222>  (9)..(9)
<223>  phosphorothioate or phosphorodithioate on complement strand


<400>  55
cccacatgta cacgccgccc ccgccc                                       26



<210>  56
<211>  22
<212>  DNA
<213>  Artificial Sequence


<220>
<223>  Aptamer


<220>
<221>  misc_feature
<222>  (9)..(9)
<223>  n = a, c, t, or g


<220>
<221>  misc_feature
<222>  (14)..(14)
<223>  n = a, c, t, or g


<220>
<221>  modified_base
<222>  (4)..(4)
<223>  phosphorothioate or phosphorodithioate
```

```
<220>
<221>  modified_base
<222>  (6)..(6)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (10)..(10)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (12)..(12)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate on complement strand

<400>  56
cccacatgna cacnccgccc cc                                              22


<210>  57
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Aptamer

<220>
<221>  modified_base
<222>  (7)..(7)
<223>  phosphorothioate or phosphorodithioate

<220>
<221>  modified_base
<222>  (9)..(9)
<223>  phosphorothioate or phosphorodithioate

<400>  57
gggcgtatat gtgtggcggg gg                                              22
```